

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



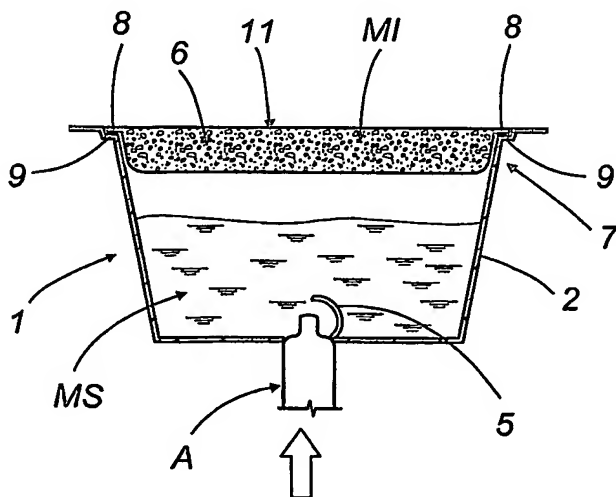
(43) International Publication Date
26 August 2004 (26.08.2004)

PCT

(10) International Publication Number
WO 2004/071899 A1

- (51) International Patent Classification⁷: **B65D 81/32**, 85/804
- (21) International Application Number: PCT/IB2004/000396
- (22) International Filing Date: 5 February 2004 (05.02.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
BO2003A000062 13 February 2003 (13.02.2003) IT
- (71) Applicant (for all designated States except US): **I.M.A. INDUSTRIA MACCHINE AUTOMATICHE S.P.A.** [IT/IT]; Via Emilia Levante, 428-442, I-40064 Ozzano Emilia (IT).
- (72) Inventor; and
(75) Inventor/Applicant (for US only): **FRANCESCHI, Fabio** [IT/IT]; Via Pirazzoli, 26, I-40027 Mordano (IT).
- (74) Agent: **LANZONI, Luciano**; Bugnion S.p.a., Via Goito, 18, I-40126 Bologna (IT).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:
— with international search report
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: A CAPSULE TO BE USED TO PREPARE AN INFUSED BEVERAGE



(57) Abstract: A capsule (1) used to prepare an infused beverage, especially cappuccino or macchiato coffee, comprises a first container (6) made of a substantially flexible material and containing a powdered infusion substance (MI), the coffee, and a second container (2), attached to the first container (6), made of a substantially rigid material and containing a powdered soluble substance (MS), the milk.

DescriptionA capsule to be used to prepare an infused beverageTechnical Field

The present invention relates to a capsule that can be used to prepare an infused beverage.

5 In particular, the present invention relates to a single-dose coffee capsule to be used in an espresso coffee machine in which a flow of hot or boiling water forced through the capsule positioned in a percolating chamber produces a hot milk or coffee beverage, such as, for example, macchiato espresso coffee or cappuccino, which the present specification expressly refers to
10 but without restricting the scope of the invention.

Background Art

Nowadays, a very popular way of preparing espresso coffee, especially in the home, is to use single-dose "coffee pods", which
15 are extremely easy to use and readily available on the market. Typically, in this context, a pod is a single measure of coffee or other infusion product enclosed in a sealed filter paper container or bag of substantially cylindrical shape designed to be placed in a suitable holder forming part of the espresso coffee machine.

20 European patent EP 776166 B1 describes the method for making a filter paper bag or pod where the infusion material, namely coffee, is compressed, mixed with soluble additive material, such as powdered milk or creamer or the like, and enclosed between two layers of filter paper. The pod thus obtained can be used in an
25 espresso coffee machine to make a hot coffee and milk beverage, especially cappuccino.

The use of a pod of the type made of filter paper, as described in the aforementioned patent, has considerable disadvantages.

30 The hot water flowing through the filter paper pod dissolves

all the soluble additive material, namely the powdered milk, present in the mixture, whilst the infusion material, namely the coffee, tends to remain compacted. As a result, the beverage made with pods of this kind often contains incorrect proportions of milk to coffee. In other terms, the beverage made using the pods described above, which are made entirely of filter paper, contains an excessively high concentration of milk, making it unpleasant to the taste.

Another disadvantage of these pods made entirely of filter paper is that the part of the mixture constituted by the soluble additive material dissolves completely, thus partly emptying the pod, causing it to become soft and spongy, and difficult to remove from the holder of the coffee machine when an unused pod has to be placed in the machine to make another cup of coffee.

The present invention has for an aim to provide a capsule used to prepare an infused coffee and milk beverage that overcomes the above mentioned disadvantages.

Disclosure of the invention

The present invention accordingly provides a capsule that can be used to prepare an infused beverage and that is characterised in that it comprises a first container made of a substantially flexible material and containing a powdered infusion substance, and a second container made of a substantially rigid material and containing a powdered soluble substance.

Brief description of the drawings

The invention will now be described with reference to the accompanying drawings which illustrate a preferred, non-restricting embodiment of a capsule used to prepare an infused beverage, and in which:

Figure 1 is a front cross section of a preferred embodiment of the capsule according to the invention;

Figure 2 is a detail, shown in cross section, of the capsule of Figure 1;

Figure 3 is another front cross section of the capsule of Figure 1;

Figure 4 is a perspective view of the capsule according to the present invention;

Figure 5 is a front cross section of the capsule of Figure 4 during infusion; and

5 Figure 6 is a detail, shown in cross section, of the capsule of Figure 5.

Detailed description of the preferred embodiments of the invention

10 With reference to the accompanying drawings, the numeral 1 denotes a single-dose capsule for use in an espresso coffee machine to prepare a hot coffee and milk beverage, especially cappuccino.

15 The espresso coffee machine, not illustrated because it is a very well known type of machine, basically comprises a device for producing a flow of hot or boiling water that is forced through the capsule 1 once the latter has been placed in a holder in a percolating chamber where the hot beverage is brewed.

20 The capsule 1 comprises a closed container or cartridge 2, preferably in the shape of truncated cone made of a food safe plastic material.

25 As illustrated in Figures 5 and 6, the bottom surface 3 of the cartridge 2 has a central hole 4, preferably circular, covered by a seal 5 of suitable material designed to be opened or pierced by a hollow needle A forming part of the coffee machine. In an alternative embodiment, the seal 5 forms an integral part of the bottom surface 3 of the cartridge 2, that is to say, it constitutes a portion of the surface 3 that can be easily pierced.

30 The cartridge 2 holds a predetermined quantity of powdered soluble material MS comprising powdered milk or creamer or the like. The material MS may also comprise a predetermined quantity of powdered sugar.

35 As illustrated in Figures 1 and from 3 to 5, the capsule 1 also comprises a container or pod 6 of filter paper or similar filter material, containing a tablet of infusion material MI, namely coffee powder, and positioned at the top 7 of the cartridge 2.

More specifically, as shown in Figures 1, 2, 3 and 5, the

outer annular edge 8 of the pod 6 rests on, and is fixed to, a matching annular protuberance 9 of the cartridge 2, running round the outer edge at the top 7 of the cartridge 2.

5 The edge 8 of the pod 6 is fixed to the annular protuberance 9 of the cartridge 2 preferably by a gluing, heat-sealing or similar process.

In a still more preferable solution, fixing is accomplished by the currently known process of ultrasound sealing.

10 As illustrated in Figures 2, 3 and 4, the capsule 1 is advantageously covered and sealed by a sheet 10 of cover material, such as, for example, aluminium foil or the like, which is applied to the end of the protuberance 9 of the capsule 1 cartridge 2, for example by gluing, heat sealing or ultrasound sealing, in such a way as to cover the top 11 of the pod 6, thus keeping in the aroma
15 of the coffee it contains.

The cover 10 is designed to be removed just before the capsule 1 is placed by the user in the appropriate holder in the coffee machine. The user can then start preparing the cappuccino by pressing the coffee machine start button which causes a
20 relative movement between the needle A and the capsule 1 such that the needle A pierces the seal 5 and penetrates the hole in the capsule 1.

The flow of hot water produced by the machine passes first through the pod 6, creating a flow of infused coffee MI which
25 falls onto and wets the soluble creamer MS inside the cartridge 2 and from there flows through the hollow interior of the needle A to produce cappuccino that fills an underlying glass or cup (not illustrated).

Thus, a delectable cappuccino with an optimum proportion of
30 milk to coffee, can be prepared every time.

Once used, the capsule 1 can be removed very easily from the machine, thanks especially to the closed, rigid structure of the cartridge 2. Further, when the capsule 1 is moved away from the needle A, the seal 5 tends to re-close the hole 4, preventing
35 residual water or beverage from dripping out and dirtying the user or the area around the machine.

Moreover, it should be stressed that the capsule 1 disclosed

herein can be safely handled and sold without any overwrapping thanks to the rigid structure of the cartridge 2 and to the cover 10 attached to the top of it and placed only over the top face of the pod 6. This means less packaging material is required which in turn means not only considerable savings in terms of lower production and selling costs but also a reduced impact on the environment.

It will be understood that the capsule as described herein can be modified and adapted in several ways without thereby departing from the scope of the inventive concept. Moreover, all the details of the invention may be substituted by technically equivalent elements.

Claims

1. A capsule (1) used to prepare an infused beverage, characterised in that it comprises a first container (6) made of a substantially flexible material and containing a powdered infusion substance (MI), and a second container (2), attached to the first
5 container (6), made of a substantially rigid material and containing a powdered soluble substance (MS).
2. The capsule according to claim 1, characterised in that the flexible first container (6) is attached to the rigid second container (2) by heat sealing.
- 10 3. The capsule according to claim 1, characterised in that the flexible first container (6) is attached to the rigid second container (2) by gluing.
4. The capsule according to claim 1, characterised in that the flexible first container (6) is attached to the rigid second
15 container (2) by ultrasound sealing.
5. The capsule according to any of the foregoing claims from 1 to 4, characterised in that at least the top of it is covered by a sheet (10) of protective material.
- 20 6. The capsule according to any of the foregoing claims from 1 to 5, characterised in that the flexible first container (6) comprises a pod (6) made of filter paper or other similar filter material.
7. The capsule according to any of the foregoing claims from 1 to 6, characterised in that the rigid second container (2)
25 comprises a cartridge (2) made of a food safe plastic material.
8. The capsule according to claim 7, characterised in that the bottom surface (3) of the cartridge (2) has a hole (4) in it, covered by a seal (5) of suitable material designed to be pierced or removed.
- 30 9. The capsule according to claim 8, characterised in that the seal (5) constitutes a portion of the bottom surface (3) of the cartridge (2).
10. The capsule according to claims 6 and 7 or 8, or 9, characterised in that the pod (6) of filter paper has an annular

outer edge (8) fixed to a matching annular protuberance (9) on the plastic cartridge (2), at the top (7) of the cartridge (2) itself.

11. The capsule according to claims 5 and 10, characterised in that the sheet (10) of protective cover material is removably placed over the top of the filter paper pod (6); the sheet (10) being fixed to the edge of the outer protuberance (9) of the cartridge (2).

12. The capsule according to any of the foregoing claims from 1 to 11, characterised in that the infusion substance (MI) comprises powdered coffee.

13. The capsule according to any of the foregoing claims from 1 to 12, characterised in that the soluble substance (MS) comprises powdered milk and/or creamer and similar soluble substances.

1/2

FIG.1

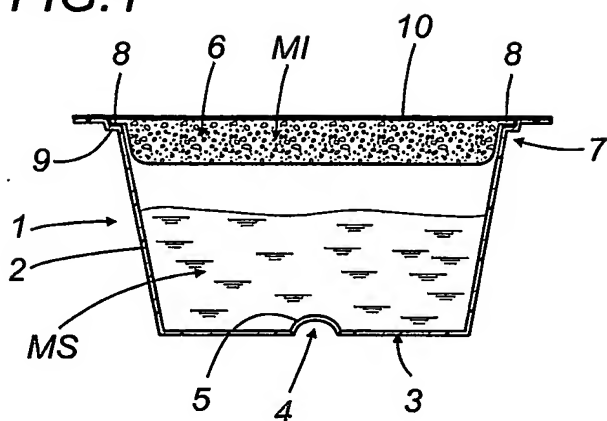


FIG.2

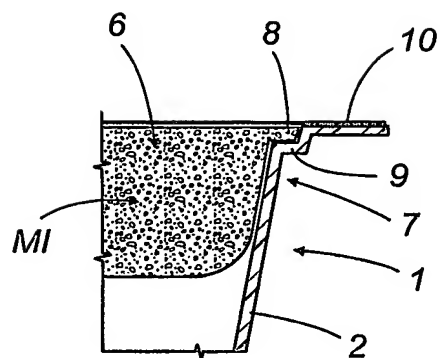


FIG.3

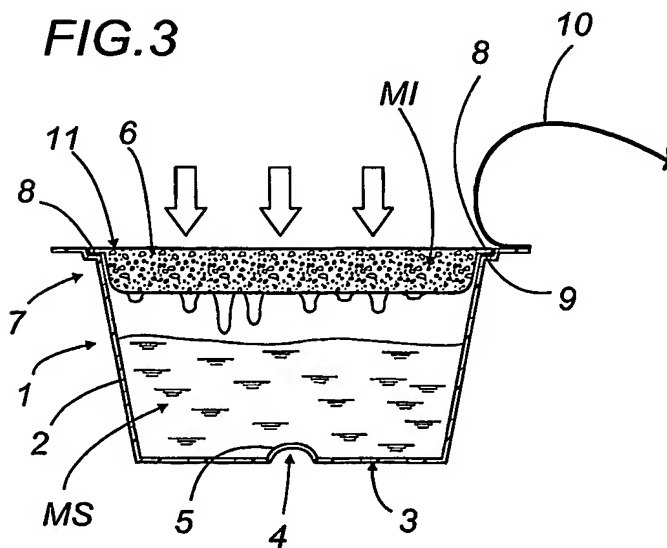


FIG.4

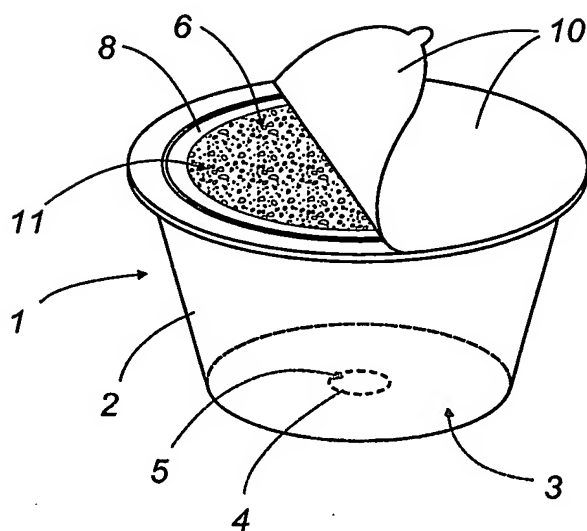


FIG.5

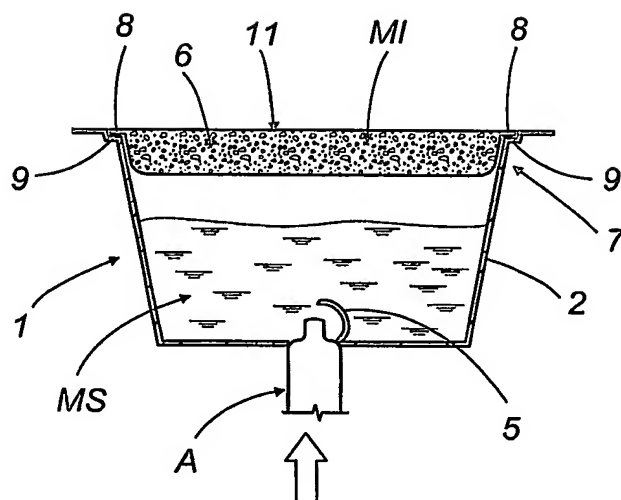
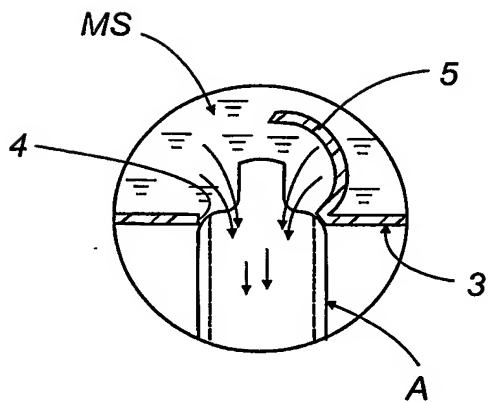


FIG.6



INTERNATIONAL SEARCH REPORT

 International Application No
 PCT/IB2004/000396

 A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 B65D81/32 B65D85/804

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CH 688 686 A (COFFEA SA) 15 January 1998 (1998-01-15) column 2, line 25 - line 30 column 2, line 51 - line 54; figure 1	1-5, 7, 12, 13
Y	column 3, line 26 - line 55; figures 2a, 2b column 5, line 16 - line 22	8, 9
Y	EP 0 007 876 A (EMBALLAGE STE GLE POUR) 6 February 1980 (1980-02-06) figure 1	8, 9
A	DE 19 24 552 U (FA. WILHELM KIWALL) 30 September 1965 (1965-09-30) claim 1; figures	8
	----- -/--	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

* & * document member of the same patent family

Date of the actual completion of the international search

24 May 2004

Date of mailing of the international search report

02/06/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
 Fax (+31-70) 340-3016

Authorized officer

Bridault, A

INTERNATIONAL SEARCH REPORT

In International Application No
PCT/IB2004/000396

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
E	<p>EP 1 398 279 A (LEE DE NV SARA) 17 March 2004 (2004-03-17) paragraph '0024! paragraph '0030! - paragraph '0031!; figure 7</p>	<p>1,6,7, 10,12,13</p>

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IB2004/000396

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
CH 688686	A	15-01-1998	CH 688686 A5	15-01-1998
			AT 400291 B	27-11-1995
			AU 650064 B2	09-06-1994
			AU 8720191 A	26-05-1992
			BE 1006165 A5	31-05-1994
			CA 2072367 A1	01-05-1992
			CH 682909 A5	15-12-1993
			WO 9207775 A1	14-05-1992
			DE 4192762 C2	19-09-2002
			DE 4192762 T	28-01-1993
			DK 85792 A	30-06-1992
			EP 0507905 A1	14-10-1992
			ES 2085823 A1	01-06-1996
			FR 2668451 A1	30-04-1992
			GB 2255494 A , B	11-11-1992
			IT 1250066 B	30-03-1995
			JP 8032249 B	29-03-1996
			JP 5502817 T	20-05-1993
			LU 88131 A1	15-02-1993
			NL 193790 B	03-07-2000
			NL 9120010 T	01-10-1992
			PT 99373 A , B	31-01-1994
			SE 513548 C2	02-10-2000
			SE 9201946 A	24-06-1992
			US 5472719 A	05-12-1995
EP 0007876	A	06-02-1980	FR 2431970 A1	22-02-1980
			DK 317379 A	29-01-1980
			EP 0007876 A1	06-02-1980
			JP 55020198 A	13-02-1980
DE 1924552	U		NONE	
EP 1398279	A	17-03-2004	NL 1021325 C2	24-02-2004
			EP 1398279 A2	17-03-2004
			WO 2004018326 A1	04-03-2004